

# HEALTH BULLETIN

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## Mortality and Occupational Exposure to Ionizing Radiation

A report by Dr. G. M. Kendall and coworkers entitled "Mortality and Occupational Exposure to Ionizing Radiation" was published in the British Medical Journal on January 25, 1992. The purpose of this study was to determine if there was an increased rate of death from cancer in approximately 95,000 British radiation workers who had been employed at any of several major nuclear sites in the United Kingdom.

During their employment at these nuclear sites, most of the workers had received total radiation doses that were very low, less than 10 mSv (1 rem). For comparison, the average person who does not work in radiation-related industries receives about the same amount of radiation from the natural environment in about 40 months. Only a small fraction of these workers (about 9 percent) had received a total dose that was higher than 100 mSv (10 rem).

This study found that the death rate for all causes combined was lower for these workers than for the general population of England. These results are consistent with other studies showing that worker populations tend to have lower mortality rates than the general population because workers must be healthy to be hired, and must remain healthy to continue their employment.

Among the British radiation workers, the death rate for all types of cancer combined was lower than expected. Death rates for lung cancer and most kinds of leukemia were lower than those for the general population; however, the death rate for thyroid cancer was twice as high as expected. The authors compared cancer death rates among workers with different radiation doses in order to determine if workers with a higher total radiation dose also had a higher rate of cancer. The rate of death for all kinds of cancer combined tended to increase slightly with increasing total dose. The death rates for leukemia (excluding chronic lymphatic leukemia) and for multiple myeloma increased with increasing total dose. Leukemia and multiple myeloma are two types of cancer that start in the bone marrow. No other types of cancer, such as lung and thyroid, were associated with radiation dosage.

The findings of this study are largely negative; however, the study had several limitations. For example, the group of workers being studied was very young (about half were less than age 45), and the followup period was fairly short (less than 15 years) for many of the workers. These factors are considered important because some types of cancer do not show up until many years after a person has been exposed. Another limitation is that the study did not take into account any other occupational exposures (for example, toxic metals or chemicals) or lifestyle factors that might have an influence on the death rates of these workers.

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